

KUDRYASHOVA, V.N., kandidat tekhnicheskikh nauk; BORISOVA, T.I., inzhener.

Conveyer belts for the finishing of fine tableware at the Gusev  
crystal glass factory. Leg.prom.15 no.2:51-53 F '55. (MIRA 8:4)  
(Gusev—Glass manufacture) (Conveying machinery)

KUCHERSKAYA, F.R.; BORISOVA, T.I.; MITYUSHIN, I.I.; IVANCHENKO, P.M., red.;  
ZAYTSEVA, T.M., red.; KOGAN, V.V., tekhn.red.

[Efficient methods of manufacturing blown stemware] Ratsional'nye  
sposoby vyrabotki stekliannykh vyduvnykh izdelii na nozhke. Moskva,  
Gos. nauchno-tekhn.izd-vo M-va tekstil'noi promyshl. SSSR, 1957.  
51 p. (MIRA 12:3)

1. Russia (1923- U.S.S.R.) Ministerstvo legkoy promyshlennosti.  
Tekhnicheskoye upravleniye. Byuro tekhnicheskoy informatsii.
2. Sotrudnik Vsesoyuznogo nauchno-issledovatel'skogo instituta  
steklovolokna Ministerstva legkoy promyshlennosti SSSR (for  
Kucherskaya, Borisova, Mityushin).  
(Glass blowing and working)

*BORISOVA, T. I.*

The polarization capacity of the mercury electrode - 1  
Borisova and M. Proskurnin. *Zhita Fizicheskaya Khimiya*, 8,  
N° 4, 819-28 (1960) (USSR). The capacities of  
the double layer on Hg in solns. of HCl, KCl and CsCl  
have been measured. In all cases the data show a max. in  
the region in which the potential against a Hg-NaKCl-  
HgCl<sub>2</sub> electrode is +0.4 to +0.5 v.

4

CL

Dependence of the capacity of the mercury electrode on the frequency in measurements using alternating current. T. Borisova and M. Proskurnin. *Acta Physicochim.* U. R. S. S. 12, 371-6(1940)(in German).—With frequencies from 50 to 3500 cycles/sec., the capacity of a Hg electrode in  $N KCl$  soln. is practically const. for negatively charged Hg, and shows dispersion near the electrocapillary max., but the max. factor of 1.47 is much less than that demanded by Thon's theory (cf. *C. A.* 29, 1723). F. H. Rathmann

COMMON ELEMENTS

OPEN

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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L 59539-65 EPA(s)-2/EWT(m)/EPF(c)/EPF(n)-2/EWP(t)/EWP(b) Pr-4/Pt-7/Pu-4 IJP(c)

ACCESSION NR: AP5016827

JD/WH/JG

UR/0364/65/001/006/0709/0713  
541.136

AUTHOR: Trusov, G. N.; Borisova, S. I.

TITLE: Ionization of <sup>11</sup>chlorine and <sup>127</sup>iodine in molten salts <sup>16</sup>

SOURCE: Elektrokimiya, v. 1, no. 6, 1965, 709-713

TOPIC TAGS: chlorine ionization, iodine ionization, molten salt, electrolysis

ABSTRACT: Electrolytic ionization of chlorine was studied in molten salts: silver chloride, lead chloride, and a eutectic mixture of lithium and potassium chlorides. Electrolytic ionization of iodine was studied in molten lead iodide. Poreless pyrolytic graphite and carbon electrodes were used for ionization of chlorine. Ionization of iodine was studied on a tungsten electrode. The experimental set-up consisted of two electrodes immersed in the molten salt electrolyte. Current density as a function of potential difference on the electrodes was measured in various molten salt electrolytes using an OP-1-61 oscillographic polarograph. In all experiments the rate of change of potential was 0.1 volts/sec. Absence of a plateau on

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L 59539-65

ACCESSION NR: AP5016827

the chlorine ionization curves corresponding to the saturation current at sufficiently high cathode potential is a characteristic feature of carbon electrodes. For chlorine ionization at 520°C, at a given potential on the pyrolytic graphite electrode the current density decreases with electrolyte used in the following sequence:  $PbCl_2$ , AgCl, eutectic LiCl-KCl. For chlorine ionization on a pyrolytic graphite electrode at 570°C with eutectic LiCl-KCl electrolyte and at 600°C with AgCl electrolyte, the current densities at a given electrode potential are smaller for the completely submerged electrode than for the partially submerged electrode. For an only very slightly submerged electrode the corresponding current density is greater by an order of magnitude than that obtained in the above two cases. Using AgCl electrolyte for electrolytic ionization of chlorine the current densities obtained with a carbon electrode are 100 times greater than those obtained with a pyrolytic graphite electrode. This is due to the ability of carbon to develop tri-phase boundary lines greater than 11 cm/cm<sup>2</sup>. Current density at a given electrode potential was also higher for a partially submerged than for a completely submerged tungsten electrode in the case of iodine ionization at 500°C using  $PbI_2$  as electrolyte. "The authors thank M. A. Avdeyenko for his help in carrying out this work." Orig. art. has: 7 figures.

Card 2/3

L 59539-65

ACCESSION NR: AP5016827.

ASSOCIATION: Filial fiziko-khimicheskogo instituta im. L. Ya. Karpova. (Affiliate  
of the Physicochemical Institute)

SUBMITTED: 25Nov64

ENCL: 00

SUB CODE: GC

NO REF SOV: 002

OTHER: 003

*llc*  
Card 3/3

BORISOVA, S.P., aspirant; KUDRYAVTSEVA, T.P., kand.veterin.nauk, nauchnyy  
rukovoditel' raboty

Differential pathomorphological diagnosis of leucosis in poultry.  
Veterinariia 41 no.3:41-43 Mr '65.

(MIRA 18:4)

1. Vsesoyuznyy institut eksperimental'noy veterinarii.



BORISOVA, S.Yu. (Kiyev)

~~Asymptotic representation of the Cauchy problem for an integro-~~

Asymptotic representation of the Cauchy problem for an integro-differential equation containing a small parameter at the higher derivatives in the case of an irregular kernel. Ukr. mat. zhur. 17 no.2:19-28 '65. (MIRA 18:5)

KONOV, V., inzh.; SAKHAROV, S., inzh.; SUBBOTIN, I., inzh.; CHEREMYKH, Y., inzh.;  
KARYAKO, B., inzh.; RASSHCHEPKIN, V., inzh.; BORISOVA, T., inzh.;  
PEREPELITSYN, M., inzh.; GARMASH, V., inzh.; GOLOVINA, V., inzh.

New developments in building practice. Na stroi. Ros. 4 no.1:7,11,14,18,  
26,30 Ja '63. (MIRA 16:3)

(Building—Technological innovations)

BEKKER, Z.E.; DMITRIYEVA, S.V.; BORISOVA, T.G.; TURKOVA, Z.A.; LISINA, Ye.S.;  
CHAPLINA, L.B.

Characteristics of the development of molds producing various  
antibiotic and antitumor substances. Mikrobiologiya 34 no.4:653-  
660 J1-Ag '65. (MIRA 18:10)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut antibiotikov;  
Eksperimental'naya laboratoriya zavoda imeni Karpova; Biologo-  
pochvennyy fakul'tet Moskovskogo gosudarstvennogo universiteta  
imeni M.V.Lomonosova.

BORISOVA, T. I.

PA 14T89

USSR/Electrodes, Mercury  
Capacitance - Measurements

Apr 1947

"Determination of the Capacity of a Mercury  
Electrode in Solutions of Chlorides, Bromides,  
and Iodides by the Commutator Method," T. I.  
Borisova, M. A. Proskurnin, 5 pp

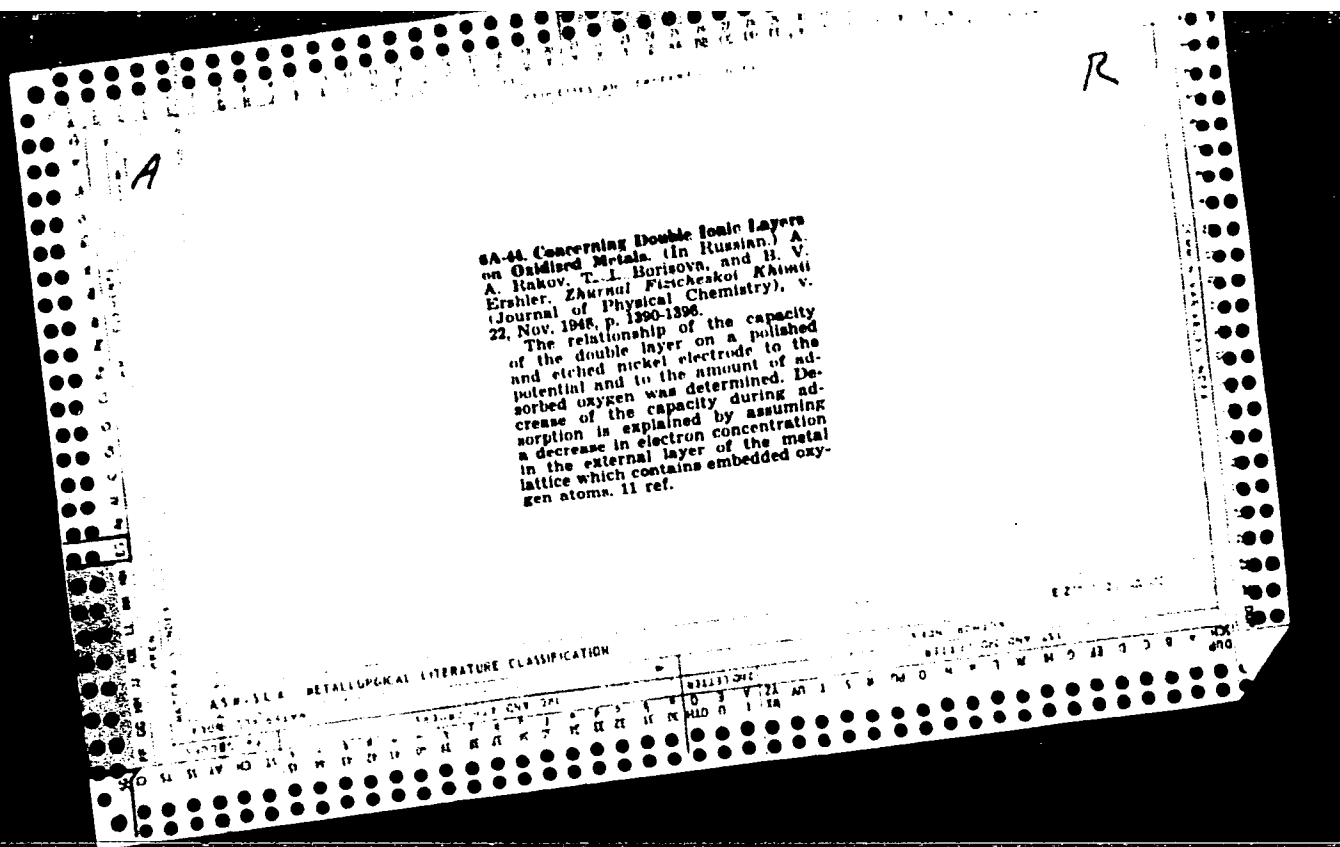
"Zhur Fiz Khim" Vol XXI, No 4 463-7

Gives detailed account of experiments and apparatus,  
with schematic diagram, graphs and a table. Gives  
results of the measurements and concludes that the  
data obtained by the new method support the results  
of the measurements of Borsina and Frumkin, made  
with alternating current.

14T89

M

**\*Determination of the Zero Points of Solid Metals from Measurements of the Capacity of the Double Layer. I.—Lead.**  
 T. Horinoya, B. Ershler, and A. Frumkin (Zhur. Fiz. Khim., 1948, 22, 925-929; C. Abn., 1949, 43, 470).—[In Russian].  
 The double-layer capacity  $C$  of a smooth Pb electrode was measured with an A.C., the amplitude of which was 20 mV., the electrode being cathodically polarized with a D.C. voltage of which was varied within 1 V. When the e.m.f. of the cell  $\text{Hg}|\text{Hg}_2\text{Cl}_2|\text{N-KCl}|\text{soln. X}|\text{Pb}$  was 0.97 V., the  $C$  passed through a min. whatever the compn. of the soln. X. The min. value of  $C$  was ~18 microfarads/cm.<sup>2</sup> when X was N-KCl, ~12-13 in 0.01N-KCl, 6 in 0.0001N-KCl, 15 in N-H<sub>2</sub>SO<sub>4</sub>, ~12-13 in 0.001N-H<sub>2</sub>SO<sub>4</sub>, and 6 in 0.0001N-H<sub>2</sub>SO<sub>4</sub>. When the frequency of the A.C. increases (up to 500 c./s.), the min.  $C$  decreases by a few %. When the e.m.f. is lowered from 0.97 V.,  $C$  increases more steeply than when the e.m.f. is raised. In contrast to Hg, there is no range of potential-independent  $C$  at high cathodic polarizations; this shows that the double layer on Pb is different from that on Hg. The potential of the min.  $C$  is that of the zero charge. It differs from the potential of the electrocapillary max. of Hg by 0.46 V. This difference is almost equal to the contact potential Hg/Pb and to the difference between the electrocapillary max. of Hg and liq. Pb.



BORISOVA, T. I.

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\*Study of the State of the Surface of an Electrode in Anodic Reactions by the Alternating Current Method. T. I. Borisova (Trudy Sovetskoye po Elektrokhimii 1959-1963, 338-395).—(In Russian). B. measured the differential capacity and electrode resistance for Ag in 1N-NaOH; Pt in 1N-H<sub>2</sub>SO<sub>4</sub> (with and without Na<sub>2</sub>SO<sub>4</sub>), and in HClO<sub>4</sub>; and Ni in 1N-NaOH. The electrochem. oxidation of the metals leads to the initial formation of a coating of the lowest (badly-conducting) oxide, later converted into higher, good-conducting, oxides. The points of zero discharge for Ag and Pt were 0.05 and 0.55 V., resp., more positive than that for Hg.

G. V. E. T.

Sm

CA

Determination of the zero voltage points of solid metals from measurements of the capacity of the double layer. II. Thallium, cadmium, lead. T. I. Borisova and B. V. Ershler (Karpov Inst. Phys. Chem., Moscow). *Zhur. Fiz. Khim.* 24, 337-44 (1950); cf. *C.A.* 43, 470i.—The curves "electrode capacity  $C$  against applied voltage  $\varphi$ " have min. at  $-0.46$  v. for Pb in  $0.01$   $N$  KCl,  $-0.61$  for Tl in  $0.001$ - $0.1$   $N$  KCl, and  $-0.70$  for Cd in  $0.005$   $N$  KCl, all potentials being referred to the max. of the electrocapillary curve of Hg. In agreement with Frumkin's theory (*C.A.* 40, 2055) these potentials are almost identical with the contact potentials Pb-Hg, Tl-Hg, and Cd-Hg, resp. The shapes of the  $C$ - $\varphi$  curves were different for plate and for droplike solid electrodes (an apparatus for making such electrodes is described). In the latter instance the curves were similar to those for Hg drops, and the min.  $C$  was about 25 for Pb and about 15 microfarads/sq. cm. for Cd. Similar curves were obtained for plate Cd electrodes heated in H. On the contrary, freshly scraped electrode plates gave  $C$  which showed no region of const. values greatly depended on the KCl concn. (e.g., min.  $C$  for Cd was 33 in  $N$  KCl and 24 in  $0.005$   $N$  KCl), and decreased when the frequency of the charging current increased (e.g., min.  $C$  for Tl in  $N$  KCl was 40 at 200 cycles/sec. and 20 at 2000 cycles/sec.). The difference between the two types of the  $C$ - $\varphi$  curves is due to non-uniform distribution of current over the rough plate electrodes. J. J. Bikerman



BORISOVA T.I.

USSR.

The determination of the concentration of carbonyl groups in polyethylene by the method of dielectric losses. G. P. Michailov and T. I. Borisova. *Zhur. Tekh. Fiz.* 23, 4160-68 (1953). — The processes of C=O groups in polyethylene arise from oxidation processes during the polymerization. The value of the dielec. loss, characterized by the tangent of the angle of loss, can serve as a measure of the concn. of the polar C=O groups. The concns. of the C=O groups are calculated by use of the formula of Fuoss and Kirkwood (C.A. 35, 3046\*). The data thus obtained agree very well with data obtained by infrared spectroscopy. J. R. Leach

BORISOVA, T. I.

CATALYST

Chemical Abst.  
Vol. 48 No. 3  
Feb. 10, 1954  
Electrochemistry

9-2-54  
JLP

The state of the electrode surface during the liberation of oxygen and anodic oxidation. T. I. Borisova and Y. I. Veselovskii (L. Ya. Karpov Phys.-Chem. Inst., Moscow). *Zhur. Fiz. Khim.* 27, 1195-1207 (1953); of preceding abstr.—Electrochem. oxidation was mainly chem. oxidation by surface oxides, and the function of the elec. current was to re-form these oxides after their reduction. The differential capacity  $C$  and the resistance  $R$  of the surface of a wire were detd. by comparison with a capacitance and a resistance in series. (a) When the potential  $\phi$  (against  $NH$  electrode) of  $Ag$  in  $N NaOH$  was gradually varied from  $-0.5$  to  $+1.8$  v, and  $C$  and  $R$  were detd. with a.c. of 5 cycles/sec.,  $C$  showed max. at  $0.0$  v. (adsorption of  $H$ ),  $0.8$  v. (formation of a surface oxide),  $1.2$  v. (formation of  $Ag_2O$ ), and  $1.5$  v. (formation of higher  $Ag$  oxides; in this highest max.,  $C$  was 455 microfarads/sq. cm.); the shallow min. at  $0.6$  v. corresponded to zero charge of oxidized  $Ag$  surface, and the deep min. ( $C = 20$  microfarads/sq. cm.) at  $1.3$  v. was due to lower oxides which were poorly conducting, as  $R$  otherwise small, reached  $10^4$  ohm/sq. cm. at  $1.3$  v. The min. of  $C$  at  $1.3$  v. was visible also at  $10^4$  cycles/sec., while all the other max. and min. disappeared. The  $R$  decreased when frequency increased; e.g., it was 25, 10,000, and 90 at 5 cycles, and 1.2, 9.2, and 1.8 at  $10^4$  cycles for  $\phi = 0.4, 1.4, \text{ and } 1.85$  v., resp. (b)  $Pt$  in  $N H_2SO_4$  had a min. of  $C$  (25 microfarads/sq. cm.) and a max. of  $R$  (3 ohm/sq. cm.) at  $0.9$  v., i.e. at the potential of  $Pt$  oxidized by air. A max. of  $C$  and shallow min. of  $R$  occurred at  $1.5$  v. (formation of a high-conducting higher oxide). This max. of  $C$  was visible between 2 and 20,000 cycles/sec. also in  $N HClO_4$ , but it disappeared after a strong anodic polarization of  $Pt$ . The potential of zero charge of  $Pt$  was  $0.35$  v. in  $0.035N H_2SO_4$ . (c) In  $N H_2SO_4 + 0.1M Na_2SO_4$ ,  $C$  and  $R$  had a high max. (110 microfarads/sq. cm., 27 ohm/sq. cm.) at  $0.4$  v., i.e.  $0.7$  v. more anodic than the equil. potential but at the  $\phi$  of oxidized  $Pt$ , this showed that  $SO_4^{--}$  was oxidized by surface oxides.  $C$  had a min. at  $1.2$  v. Oxidation of  $HNO_3$  started at  $1.05$  v., i.e.  $0.1$  v. more anodic than the equil. potential. On the contrary,  $C$  in  $N H_2SO_4 + 0.1N FeSO_4$  had a max. at  $0.77$  v., i.e. at the equil. potential, because surface oxides did not participate in the reaction  $Fe^{++} \rightarrow Fe^{+++}$ . Oxidation of  $EtOH$  to  $AcH$  occurred at  $0.7-0.9$  v. and oxidation of  $AcH$  to  $AcOH$  at  $1.2-1.5$  v. J. L. R.

BORISOVA, T. I.

USSR/Chemistry

Card 1/1

Authors : Elina, L. M., Borisova, T. I., and Zalkind, Ts. I.

Title : The process of electro-chemical separation of oxygen on nickel

Periodical : Zhur. Fiz. Khim., 28, Ed. 5, 785 - 796, May 1954

Abstract : Investigation of the state of a nickel electrode, during its anode polarization to potentials corresponding to the zone of oxygen supertension, showed that the separation of the oxygen takes place on the surface of the electrode covered with an oxide layer and that the very act of oxygen separation is closely connected with the properties of these oxides. The processes of electrode oxidation and oxygen separation are simultaneous at one and the same potential. At small current densities the rate of oxygen separation is limited by the rate of decomposition of the higher oxygen compound. The mechanism of the oxygen separation process is explained. Fifteen references: 3-German since 1905, 11-USSR, 1-English. Tables, drawings, graphs and photos.

Institution : The L. Ya. Karpov Physico-Chemical Institute, Moscow

Submitted : July 3, 1953

*BORISOVA, T.I.*  
USSR/Electricity - Dielectrics

G-2

Abs Jour : Referat Zhur - Fizika, No 5, 1957, 12118  
Author : Mikhaylov, G.P., Borisova, T.I., Dmetrochenko, D.A.  
Inst : Institute of High Polymer Compounds, Academy of Sciences,  
USSR, Leningrad.  
Title : Relaxation Dielectric Losses in Polymethylacrylate.  
Orig Pub : Zh. tekhn. fiziki, 1956, 26, No 9, 1924-1928  
Abstract : The tangent of the dielectric loss angle ( $\tan \delta$ ) of polymethylacrylate (PM) was measured in the low frequency region from 12 -- 80 cycles at an interval of temperatures from 17 to 120°. The measurements were with the aid of a specially adopted Schering bridge. Two maximums of  $\tan \delta$  were observed: low temperature (LT)--- in the glass-like state of the PM, and high temperature (HT)--- in the highly-elastic state of the PM. The LT is approximately

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BORISOVA, T. I.

Category: USSR

B-12

Abs Jour: R Zh--Kh, No 3, 1957, 7679

Author : Lapteva, K. A., Borisova, T. I., and Slin'ko, M. G.

Inst : Not given

Title : The Adsorption of Hydrogen on Gold-Platinum Alloys

Orig Pub: Zh. Fiz. Khimii, 1956, Vol 30, No 1, 61-68

Abstract: The adsorption of hydrogen on Pt, Au, and Pt-Au alloys (A) containing 94.96, 90.46, 79.67, 60.03, and 40.33 percent Pt has been investigated by the current voltage curve method in 1N H<sub>2</sub>SO<sub>4</sub>, using a current density  $i$  of  $1 \times 10^{-7}$  amps/cm<sup>2</sup> and cathodically depolarized electrons which have been boiled out in 4N KOH. The relationship between the adsorption properties of the metal and the configuration of its d-orbitals has been investigated; in the case of Pt the d-levels are incompletely filled, whereas in the case of Au, they are completely filled. The adsorption of hydrogen on A containing 5.04 and 9.5 percent Au is 245 and 225 microcoulombs/cm<sup>2</sup>, respectively (in the case of Pt, the adsorption is 180 microcoulombs/cm<sup>2</sup>); the adsorption decreases sharply when the Au content is

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Category: USSR

B-12

Abs Jour: R Zh--Kh, No 3, 1957, 7679

increased and reaches 0 for A containing 59.63 percent Au. Hydrogen adsorption on an Au electrode is practically nil. The variation in the amount of hydrogen adsorbed on A does not correspond to the change in the number of available d-bands in A. It is shown that during various types of treatment of the Pt electrode (dipping in boiling aqua regia, boiling in 4N KOH, and annealing in air) oxide films are formed on the surface; the oxide films are most tightly bonded to the surface in the case of annealing and least tightly in the case of treatment with KOH. The oxygen is retained in the cathode region up to  $y = 0.08v$ . The amount of hydrogen adsorbed at the Pt electrode is decreased by oxygen adsorption.

L. YA. KARPov Inst. Phys. Chem., Moscow

Card : 2/2

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BORISOVA, T. I.

B-12

USSR/Physical Chemistry - Electrochemistry.

Abs Jour : Referat Zhur - Khimiya, No 6, 25 March 1957, 18722

Author : Elina, L.M., Borisova, T.I., and Filippov, T.S.

Inst : RZhKhim, 1957, 7680

Title : On the Mechanism of Electrochemical Formation of Oxygen Compounds of Chlorine Upon a Smooth Platinum Electrode. II. Investigation of the Process of Oxidation of Chlorine-ion by the Method of Alternating Currents.

Orig Pub : Zh. fiz. khimii, 1956, 30, No 6, 1282-1290

Abstract : The authors examined the mechanism of anode oxidation of  $\text{Cl}^-$  ion in acid solutions, upon smooth Pt-electrode, by the methods of measuring capacitance (C) and resistance in alternating current of different frequency (10-2000 Hz), and by taking polarization curves. The presence of a sharp maximum in the region of potentials (E) (+1.4) - (+1.5) v. (n.v.e.) upon the curve (C,E) measured in an acidified solution of  $\text{Na}_2\text{SO}_4$  containing 0.1 n. HCl,

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*BORISOVA, T. I.*

AUTHORS: Mikhaylov, G. P., Borisova, T. I.

57-1-17/30

TITLE: Investigation of Molecular Interactions by the Method of Effective Dipole Moments on Some Glass-like Polymers (Issledovaniye molekulyarnykh vzaimodeystviy metodom effektivnykh dipol'nykh momentov v nekotorykh stekloobraznykh polimerakh).

PERIODICAL: Zhurnal Tekhnicheskoy Fiziki, 1958, Vol. 28, Nr 1, pp. 152-158 (USSR)

ABSTRACT: The properties of the dipole radical polarization i.e. of polarization in solid state, in polymethylmethacrylate and in some homologs are investigated. On the basis of the theory on dipole polarization of condensed systems the authors try to determine the quantities of the effective dipole moments. These quantities were computed per monomer member of a polymolecule beginning with the temperature-frequency-dependences of non-equilibrium-values of the generalized dielectricity constant. (Ref. 2). The values of the effective dipole elements ( $\mu_{eff}$ ) were computed for a wide range of temperature for polymethylmethacrylate (PMMA), polyethylmethacrylate (PEMA), polypropylmethacrylate (PPMA), polybutylmethacrylate (PBMA), and polyisopropylmethacrylate (P-iso-PMA). For this computation the method of the circle diagrams (ref.3) and the methods of Fuoss and Kirkwood (ref.4) were used. The computation of  $\mu_{eff}$  on the basis of the Fuoss and Kirk-

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Investigation of Molecular Interaction by the Method of Effective Dipole Moments on Some Glass-like Polymers. 57-1-17/30

wood theory with consideration of the corrections of Harris and Alacr (ref.5) was carried out according to the formula given by Mikhaylov and Sashin (ref. 6). It is demonstrated that in the case of all polymers the experimental values of  $\epsilon'$  and  $\epsilon''$  which were obtained at not very high temperatures (determined for each polymer) join the correct curves.

Considering the results of ref. 2 it can be found that these circle diagrams record the dipole radical processes in all cases except for PBMA. In the case of PBMA the dipole radical losses in the given frequency range at the same temperature must be observed in the same way as the dipole elastic ones due to which fact their separation seems complicated. At a rise of temperature a tendency of deviation of the experimental values for  $\epsilon'$  and  $\epsilon''$  from the shape of the correct arc can be observed.

This is due to imposition of dipole radical as well as of dipole elastic losses in the temperature frequency interval. For the determination of  $\epsilon'_0$  and  $\epsilon_{\infty}$  a separation of both relaxation processes was applied.  $\epsilon_0$  and  $\epsilon_{\infty}$  are the equilibrium-dielectricity constants. The most interesting change is that with the temperature of the shape of the circle diagram with P-iso-PMA. At 31 to 68°C  $\epsilon'$  and  $\epsilon''$  express the dipole radical process while at

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Investigation of Molecular Interaction by the Method of Effective Dipole Moments on Some Glass-like Polymers. 57-1-17/30

106 + 108°C the circle diagrams correspond to the dipole elastic losses. Furthermore it is demonstrated that the changes of  $\mu\sqrt{g}$  at a rise of temperature occurs in three stages. At first the effective moment nearly does not change at all only if the temperature approaches of the glass formation it begins to grow. A considerable rise of the quantity  $\mu\sqrt{g}$  begins near  $T_g$  in the temperature interval of the order of magnitude of 20°C. After that a range of slow increase of the effective dipole moment can be observed. In the case of PBMA with which the temperature of glass formation is +30°C only the third section was obtained (from  $\mu\sqrt{g} = \varphi(t)$ ). The values of the effective dipole moments corresponding to the solid state of the polymers, decrease with the increase of the homolog number. This proves that the correlation increases under the influence of atom groups of the side radical concerned. The increase of the effective dipole moment near  $T_g$  can be regarded as the result of a weakening of the intermolecular interaction. Conclusively it is stated that in the glass-like state the motion of the polar radicals is checked considerably by the main chain of the carbon atoms. This checking increases with the increase of the number of polymerhomologs which points out to a decrease of the effective dipole moment.

Card 3/4

Investigation of Molecular Interaction by the Method of Effective Dipole Moments on Some Glass-like Polymers. 57-1-17/30

There are 6 figures, and 7 references, 3 of which are Slavic.

ASSOCIATION: Institute for High-Molecular Alloys AN USSR Leningrad (Institut vysokomolekulyarnykh soyedineniy AN SSSR Leningrad)

SUBMITTED: June 15, 1957

AVAILABLE: Library of Congress

Card 4/4

BOBISOVA, T.I.

AUTHORS: Mikhaylov, G. P., Borisova, T. I. 57-1-18/30

TITLE: Investigation of Temperature-Frequency-Dependences of Dielectric Losses and Permeability of Some Polyesters of the Methacrylic Acid (Issledovaniye temperaturno-chastotnykh zavisimostey tangensa ugla dielektricheskikh poter' i pronitsayemosti nekotorykh poliefirov metakrilovoy kisloty)

PERIODICAL: Zhurnal Tekhnicheskoy Fiziki, 1958, Vol 28, Nr 1, pp. 137-142 (USSR)

ABSTRACT: This work refers to the occurrence of two types of dielectric relaxation losses demonstrated in reference 1. It is examined whether similar kinds of rules can be observed also with other representatives of the homologous series of ester of the methacrylic acid. The dependence of  $\tan \delta$  and  $\epsilon''$  in the case of polymethylmethacrylate (PMMA), polyethylmethacrylate (PEMA)<sup>x</sup>, polybutylmethacrylate (PBMA), and polyisopropylmethacrylate (P-iso-PMA) on temperature and frequency is investigated. These investigations were carried out within the range of 12 to 10<sup>6</sup> C. The measuring method for  $\epsilon''$  and  $\tan \delta$ , the production

Card 1/ 2 x) polypropylmethacrylate (PPMA)

Investigation of Temperature-Frequency-Dependences  
of Dielectric Losses and Permeability of Some  
Polyesters of the Methacrylic Acid

57-1-18/30

of the polymer samples, the electrodes and other details of the experiment were the same as in reference 1. It is demonstrated that the two kinds of electrical losses occur not only with PMMA but also with other representatives of this series (PEMA, PPMA, P-iso-PMA). It was observed that the ratio between the quantities of  $\tan \delta_{\max}$  of dipole-elastic and dipole radical losses in the polymer series concerned changes with the increase of the number of the homolog. It was observed that the time of relaxation of the dipole radical losses in the polymer series does not change and that it shows permanently the same temperature coefficient. There are 5 figures, and 8 references, 4 of which are Slavic.

ASSOCIATION: Institute for High-molecular Alloys AN USSR Leningrad  
(Institut vysokomolekulyarnykh soyedineniy AN SSSR Leningrad)  
SUBMITTED: June 14, 1957  
AVAILABLE: Library of Congress

Card 2/2

5(4)  
AUTHORS: Rakov, A. A., Veselovskiy, V. I., Nosova, K. I., SOV/76-32-12-8/32  
Kasatkin, E. V., Borisova, T. I.

TITLE: The Mechanism of the Joint Electrochemical Formation of Ozone,  
Persulfuric Acid and Oxygen on the Platinum Electrode  
(O mekhanizme sovместnogo elektrokhimicheskogo obrazovaniya  
ozona, nadsernoy kisloty i kislороda na platinovom elektrode)

PERIODICAL: Zhurnal fizicheskoy khimii, 1958, Vol 32, Nr 12,  
pp 2702 - 2710 (USSR)

ABSTRACT: The electrolysis is carried out in 10n sulfuric acid with a  
cylindrical platinum electrode refrigerated by methyl alcohol.  
Analyses of  $H_2O_2$ ,  $H_2SO_5$ ,  $H_2S_2O_8$  and ozone and measurements of  
the general acid concentration were carried out in brief  
intervals. Two stages were observed (at  $-50^{\circ}C$  and  $0,5 A/cm^2$ ).  
In the first stage oxygen was formed at a potential of 1,0 to  
1,8 V, while in the second stage the potential rose to 3,0 V  
resulting in a high persulfuric acid yield and a low ozone  
yield. The transition took place within 1 to 2 minutes. By  
means of a rapidly revolving platinum electrode in the

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The Mechanism of the Joint Electrochemical Formation of SOV/76-32-12-8/32  
Ozone, Persulfuric Acid and Oxygen on the Platinum Electrode

Dewar flask which was filled with a freezing mixture of carbon-dioxide snow and methyl-alcohol, polarization curves were plotted at various temperatures in 10n sulfuric acid. Also in this case the jump in potential was noted, the curves differing according to whether they were plotted beginning at a low amperage and ending at a high one, or vice-versa. All showed a hysteresis loop. At a temperature of  $-70^{\circ}\text{C}$  a third stage occurred in which ozone is produced abundantly at a potential of 5.5 to 7.0 V. These jumps in potential and the chemical reactions due to them are explained by the changing surface finish of the electrode and the influence of intermediate platinum compounds. There are 8 figures and 19 references, 7 of which are Soviet.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova Moskva  
(Physico-Chemical Institute imeni L. Ya. Karpov, Moscow)

SUBMITTED: July 10, 1957  
Card 2/2

BORISOVA, T.I.; MIKHAYLOV, G.P.

Study of dielectric relaxation in methylmethacrylate-styrene  
copolymers. Vysokom.sped. 1 no.4:563-573 Ap '59.  
(MIRA 12:9)

1. Institut vysokomolekulyarnykh soedineniy AN SSSR.  
(Polymers--Electric properties) (Methacrylic acid)  
(Styrene)



BORISOVA, T.I.; MIKHAYLOV, G.P.

Investigating effective dipole moments in methylmethacrylate-  
styrene copolymers. Vysokom.sped. 1 no.4:574-581 Ap '59.  
(MIRA 12:9)

1. Institut vysokomolekulyarnykh soedineniy AN SSSR.  
(Polymers--Electric properties) (Styrene)  
(Methacrylic acid)

MIKHAYLOV, G.P.; BORISOVA, T.I.

Dielectric losses and polarization of stereoregular polymethyl  
methacrylate. Vysokom. soed. 2 no.4:619-625 Ap '60.  
(MIRA 13:11)

1. Institut molekulyarnykh soyedineniy AN SSSR.  
(Methacrylic acid--Electric properties)

MIKHAYLOV, G.P.; BORISOVA, T.I.

Molecular relaxation of  $\alpha$ - and  $\beta$ -chlorosubstituted poly (alkyl methacrylates) as studied by the dielectric loss method. *Vysokm. soed.* 2 no. 12:1772-1778 D '60. (MIRA 14:1)

1. Institut vysokomolekulyarnykh soedineniy AN SSSR.  
(Methacrylic acid)

86320

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B017/B055

24.7806

1043, 1136 only

AUTHORS: Mikhaylov, G. P., Borisova, T. I.

TITLE: Investigation of the Effective Dipole Moments of  $\alpha$ - and  $\beta$ -Chlorine Substituted Polyalkyl Methacrylates

PERIODICAL: Vysokomolekulyarnyye soyedineniya, 1960, Vol. 2, No. 12, pp. 1779-1785

TEXT: Basing on the temperature- and frequency relationships of the generalized dielectric constant  $\epsilon = \epsilon' - i\epsilon''$ , the authors analyzed the relaxation-time spectrum and calculated the effective dipole moments of  $\alpha$ - and  $\beta$ -chloro derivatives of polyalkyl methacrylates. The effective dipole-elastic moments  $(\mu\sqrt{g})_{d.e.}$ , calculated from dipole-radical loss data, are not altered by replacement of the  $\alpha$ -CH<sub>3</sub> group by chlorine. The effective dipole moment as calculated from dipole-elastic relaxation, however, changes abruptly. Introduction of chlorine into the  $\beta$ -position produces no change. The static dipole moment  $(\mu\sqrt{g})_2$  increases on intro-

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86320

Investigation of the Effective Dipole  
Moments of  $\alpha$ - and  $\beta$ -Chlorine Substituted  
Polyalkyl Methacrylates

S/190/60/002/012/004/019  
B017/B055

duction of chlorine into the  $\alpha$ - or  $\beta$ -position of the monomer. Fig. 1 shows the relation  $\epsilon'' = \varphi(\epsilon')$  for the polymers. The densities and refractive indices of several polyalkyl methacrylates are listed in Table 1. Fig. 2 represents the temperature function of the parameters of relaxation. The effective dipole moments of several polyalkyl methacrylates are given in Table 2. The dipole moments of glassy polymers increase slightly with temperature. The data obtained were compared with the corresponding data for the homclogous series of polyesters of methacrylic acid. The influence of a second polar group on the relaxation properties of the polymers as a function of the position of this dipole was discussed. There are 2 figures, 2 tables, and 6 references: 4 Soviet.

ASSOCIATION: Institut vysokomolekulyarnykh soyedineniy AN SSSR  
(Institute of High-molecular Compounds of the Academy of  
Sciences USSR)

SUBMITTED: May 12, 1960

Card 2/2

86319

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AUTHORS: Mikhaylov, G. P., Borisova, T. I.

TITLE: Investigation of the Molecular Relaxation of  $\alpha$ - and  $\beta$ -Chloro-substituted Polyalkyl Methacrylates by the Dielectric Loss Method

PERIODICAL: Vysokomolekulyarnyye soyedineniya, 1960, Vol. 2, No. 12, pp. 1772-1778

TEXT: The authors investigated the temperature dependence of the dielectric loss ( $\tan \delta$ ) and dielectric constant  $\epsilon'$  of poly-methyl  $\alpha$ -chloracrylate, poly-ethyl  $\alpha$ -chloracrylate, and polypropyl  $\alpha$ -chloracrylate, polyisopropyl  $\alpha$ -chloracrylate and poly- $\beta$ -chloro ethyl methacrylate. Measurements of  $\tan \delta$  and  $\epsilon'$  were carried out at frequencies of 20 - 100000 cps and temperatures of 20-180°C, using the apparatus described in Ref. 3. Fig. 1 shows the temperature dependence of  $\tan \delta$  and  $\epsilon'$  at frequencies of 20 and 400 cps for poly- $\alpha$ -chloro alkyl acrylate. The replacement of the  $\text{CH}_3$  group by chlorine leads to an abrupt change in the temperature function of  $\tan \delta$

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Investigation of the Molecular Relaxation of  
 $\alpha$ - and  $\beta$ -Chlorosubstituted Polyalkyl  
Methacrylates by the Dielectric Loss Method

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B017/B055

and  $\epsilon'$ . The introduction of a chlorine atom causes a marked increase in dielectric loss ( $\tan \delta_{\max}$ ). Fig. 2 represents the temperature dependence of  $\tan \delta$  and  $\epsilon'$  of poly- $\beta$ -chloro ethyl methacrylate at 20 and 400 cps. The substitution of the  $\text{CH}_3$  group in  $\beta$ -position by chlorine has no effect on the height of the dielectric loss. The frequency dependence of  $\tan \delta$  and  $\epsilon'$  of the polymerizates was studied in a wide temperature range and is represented graphically in Fig. 3. The occurrence of temperature-dependent dipole-elastic and dipole-radical losses was observed. The apparent activation energy of dipole relaxation in the case of polychloro alkyl methacrylates is given in a table. The determination of the dielectric relaxation of polymerizates of polyalkyl methacrylates which are substituted by chlorine in  $\alpha$ - and  $\beta$ -position gave new aspects on the possibilities of preparing dielectrics with a higher dielectric constant. Measurements of  $\epsilon'$  were carried out in the authors' laboratory by A. I. Artyukhov. There are 4 figures, 1 table, and 5 references: 3 Soviet, 1 US, and 1 British.

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Investigation of the Molecular Relaxation of  $\alpha$ - and  $\beta$ -Chlorosubstituted Polyalkyl Methacrylates by the Dielectric Loss Method

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B017/B055

ASSOCIATION: Institut vysokomolekulyarnykh soyedineniy AN SSSR  
(Institute of High-molecular Compounds of the Academy of Sciences USSR)

SUBMITTED: May 12, 1960

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BORISOVA, T. I.

81866  
S/020/60/133/02/40/068  
B004/B064

5.4600

AUTHORS: Izidinov, S. U., Borisova, T. I., Veselovskaya, V. I.

TITLE: Electrochemical and Photoelectrochemical Behavior of the Silicon Electrode 7

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 133, No. 2,  
pp. 392 - 395

TEXT: The authors investigated monocrystalline silicon of the n- and p-type with  $p = 1 \text{ ohm.cm}$  and crystallographic (111) orientation of the surface. A cinematographic incandescent lamp served as light source ( $\sim 10^{-1} \text{ cal/cm}^2 \cdot \text{sec}$ ). The silicon surface was etched in hot KOH or in  $\text{HF} + \text{HNO}_3$ , or ground. Fig. 1 shows the dissolution of Si under hydrogen separation in KOH solutions of 0.1 - 10 N. The time change in potential occurring at the same time is the same for n- and p-Si, and depends on how the surface has been treated. Fig. 2 shows the curves of the anodic polarization for both types immediately after plunging into the solution and after the stable state has been reached. There is no essential

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Electrochemical and Photoelectrochemical  
Behavior of the Silicon ElectrodeS/O20/60/133/02/40/068  
B004/B064

difference between the two types of silicon apart from the fact that the maximum potential of the anodic curve is 200 mv more positive for the p-type than for n-Si. The photogalvanic activity  $\Delta V^c$  of the system is changed by etching. In the case of p-Si  $\Delta V^c$  rises from zero to the constant value of 600 mv; in the case of n-Si  $\Delta V^c$  becomes not more than 10-15 mv (Fig. 3). Oxidation of the surface both by means of anodic polarization and by chemical etching or introduction of oxygen into the solution exerts an influence upon the photoelectric effect; in the case of n-Si  $\Delta V^c$  is increased to 50-100 mv and  $\Delta V^c$  reduced in p-Si to 200-400 mv. After the dissolution of the oxide film the photoelectric effect is increased in p-Si and decreases with n-Si (Fig. 4). The difference of  $\Delta V^c$  for p- and n-Si in the presence of an electric field is caused by the fact that in the dissolution the surface of p-Si approaches the n-type, whereas oxidation acts in the opposite direction. Though the measured static potentials are the same for both types, the distribution of the change in potential is different at the interface of silicon - solution. The etching off of the mechanically defective layer leads to the increase of  $\Delta V^c$  in p-Si. Light acts mainly upon the space charge which can be also seen from the practically unchanged

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Electrochemical and Photoelectrochemical      S/020/60/133/02/40/Q68  
Behavior of the Silicon Electrode              B004/B064

hydrogen separation in the case of an exposure to light. The independence of the rate of irreversible dissolution of silicon in alkali of its type is due to the action of two conjugate reactions of oxidation and reduction. There are 4 figures and 7 references: 1 Soviet, 5 British, and 1 German.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova  
(Institute of Physical Chemistry imeni L. Ya. Karpov)

PRESENTED: March 18, 1960, by A. N. Frumkin, Academician

SUBMITTED: March 16, 1960

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82525

S/020/60/133/04/29/031

B004/B056

574600

AUTHORS: Yakovleva, A. A., Borisova, T. I., Veselovskiy, V. I.

TITLE: The Effect of Light Upon an Anode-polarized Germanium Electrode 9

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 133, No. 4, pp. 889 - 892

TEXT: It was the aim of the authors to investigate the effect of illumination upon the structure of the interface between germanium and electrolyte as well as upon the anodic dissolution of germanium. The method employed permitted illumination of the electrodes through the solution as well as of the dry side of the electrodes. (The electrode formed the bottom of a cylindrical Teflon vessel.) The experiments were carried out with monocrystalline n-type germanium of different resistivities in 0.1 N NaOH in a nitrogen atmosphere. The Ge electrodes were etched with CP-4 (SR-4). Illumination was carried out by means of an incandescent lamp within the range of 0.4 - 0.7  $\mu$ , partly with a constant current, and partly with constant voltage. It follows from Fig. 1 that

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The Effect of Light Upon an Anode-polarized  
Germanium Electrode

S/020/60/133/04/29/031  
B004/B056

the system was sensitive to light within the entire region of polarization. The potential barrier is removed by illumination, and the potential drops within the saturation region to the constant value of 0.5 v. Above the breakdown potential this effect stops. In the initial part of the polarization curve, the rate of the anodic reaction is not limited by the concentration of minority carriers (Fig. 2). The last-mentioned author derived equation (1):  $i = k \exp(-\Delta\psi F/RT) \cdot \exp(-\alpha \Delta H F/RT)$  for this region in an earlier paper (Ref. 7); here,  $\Delta\psi$  denotes the potential change in the volume charge of the semiconductor,  $\Delta H$  the potential change in the ionic double layer. For  $\Delta\psi$ , there further exists the dependence (2) on carrier concentration on the surface:  $C_{\text{surf}} = C_{\text{volume}} \exp(-ne\Delta\psi/RT)$ . All factors influencing the surface concentration of electrons and holes must therefore also influence  $\Delta\psi$  and the total potential difference  $\Delta\phi$ . Fig. 3 shows  $\Delta i_{\text{light}}$  and  $\Delta\phi_{\text{light}}$  as function of the intensity of illumination.  $\Delta i_{\text{light}}$  increases proportional to the absorbed light quanta.  $\Delta\phi_{\text{light}}$  rises exponentially in the initial part of polarization, and tends toward a limit with a saturation current.

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The Effect of Light Upon an Anode-polarized  
Germanium Electrode

S/020/60/133/04/29/031  
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Table 1 gives the quantum yield  $K$  for various intensities of the absorbed radiation in the case of a saturation potential. Table 2 shows the values of  $K$  for two intensities.  $K$  has a maximum in the saturation range. The results obtained by illuminating the dry side of the electrode are shown in Fig. 4, namely  $\Delta i_{\text{light}}$  as a function of  $1/l$ , the reciprocal value of the thickness of the electrode.  $\Delta i_{\text{light}}$  grows linearly with  $1/l$ . No differences between the two kinds of illumination could be found. Also in the illumination of the dry side of the electrode, a potential drop occurred with electrode thicknesses that were a multiple of the diffusion length of the minority carriers. There are 4 figures, 2 tables, and 7 references: 2 Soviet, 4 American, and 1 German.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova  
(Physicochemical Institute im. L. Ya. Karpov)

PRESENTED: March 18, 1960 by A. N. Frumkin, Academician

SUBMITTED: March 18, 1960

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BORISOVA, T. I., CAND PHYS-MATH SCI, <sup>11</sup> INVESTIGATION OF THE  
MOLECULAR RELAXATION OF AMORPHOUS POLYMERS BY THE DIELECTRIC  
METHOD. LENINGRAD, 1961. (LENINGRAD ORDER OF LENIN STATE  
UNIV IM A. A. ZHDANOV). (KL, 2-61, 198).

LEZHNEVA, K.A.; BORISOVA, T.I.; SLIN'KO, M.G.

Anodic oxidation of sulfur dioxide on gold and platinum-gold alloys. Kin.i kat. 2 no.6:854-861 N-D '61. (MIRA 14:12)

1. Fiziko-khimicheskiy institut imeni L.Ya. Karpova.  
(Sulfur dioxide)  
(Oxidation) (Platinum-gold alloys)



25219

S/074/61/030/007/001/001  
B117/B215

15.854°

AUTHORS: Mikhaylov, G. P., and Borisova, T. I.

TITLE: Study of molecular relaxation in polymers by the dielectric method

PERIODICAL: Uspekhi khimii, v. 30, no. 7, 1961, 895-913

TEXT: In the present paper, some conclusions are drawn on character and mechanism of relaxation on the basis of publications on the examination of relaxation processes in polymers by dielectric and mechanical methods. The relaxation observed by the dielectric method is characterized by the fact that the energy of the electric field applied to the polymer sample is mainly distributed by relaxants with polar groups. The molecular relaxation observed by the method of dielectric losses and polarization can be classified into two basic types: relaxation of polar radicals or of the monomer member of the macromolecule, and relaxation of the same radicals together with sections of the main chain, i.e., relaxation of sections. This was found for polymers of different structures: linear, ramified, structures with links in the chain, partly crystallized, and completely

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B117/B215

Study of molecular relaxation in ...

amorphous structures. Usually, it is assumed that the one type of relaxation in relation with the mobility of lateral polar radicals, the so-called dipole-radical losses, can only be observed within a certain temperature range which corresponds to the glass-like state of the polymer. The other type of relaxation, the so-called dipole-elastic losses, can only be observed in polymers above vitrification temperature. In the case of polymethyl methacrylate, the authors succeeded in observing dipole-radical losses at temperatures much higher than those of vitrification (Ref. 2: Polymer Sci., 30, 605 (1958); Ref. 3: ZhTF, 28, 132 (1958)). Hence, it may be assumed that dipole-radical losses are by no means restricted to the glass-like state of polymers since they have also been observed in the rubber-like state of polymers. Dipole-radical losses reflect the relaxation process caused by the motion of lateral polar groups. The main chain remains immovable during the examination. If the period of the applied field is long enough, dipole-elastic losses are observed at certain temperatures. They are due to the joint displacement of sections of the main chain and of polar side groups, i.e., they are related to the thermal motion of sections in the polymer. There are hardly any differences between the relaxation processes in ramified and nonramified polymers. This

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Study of molecular relaxation in ...

means that the kinetic units are much shorter than the distances between the points of ramification, and thus do not affect the mobility of the sections. According to publications, the relaxation time  $\tau$  of dipole-elastic losses is prolonged by an extension of the polymer sample which causes an orientation of the main chain. Probably, this is no general rule. |  
The change in the chemical structure of the monomer link of the polymer chain has an even higher effect on dipole-elastic losses than on dipole-radical losses. In this case, the introduction of polar and unpolar groups takes effect, which may be added directly to the main chain or to a lateral radical. In recent papers, much attention has been paid to the spectrum of the relaxation time. Unfortunately, the possibilities of applying this method are restricted to those cases where the shape of the distribution function of the relaxation time is independent of temperature. This is a prerequisite for this method. The effect of the structure of the macrochain on molecular relaxation becomes evident in the examination of dielectric properties of copolymers. The elasticity of the macrochain and also the character of molecular interactions may change if the percentage of the one or the other component of the copolymer is changed. This was observed during the examination of dielectric losses and polarization of

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B105/B206

Study of molecular relaxation in ...

copolymers, methyl methacrylate with styrene (Ref. 19: T. I. Borisova, G. P. Mikhaylov, Vysokomol. soyed., 1, 563, 574 (1959)), and methyl acrylate with styrene (Ref. 20: G. P. Mikhaylov, L. V. Krasner, ZhTF, 26, 1738 (1956)). The examination of molecular relaxation in isotactic polymethyl methacrylate and polystyrene by the method of dielectric losses showed that the steric regularity of the chain greatly changes the relaxation properties of polymers (Ref. 23: Authors, Vysokomol. soyed., 2, 619 (1960)). The temperature- and frequency dependences of dipole losses were studied in polyester on the basis of diene and some aliphatic and aromatic acids (Ref. 24: G. P. Mikhaylov, M. P. Eydel'vant, Vysokomol. soyed., 2, 287 (1960)). It is taken for granted that dipole-radical losses in mixed and in single-component esters are due to the relaxation of the polar COO group. The most probable relaxation time of this process is determined by the mobility of the chain segment directly adjacent to this group. The effect of the structure of the monomer link of the macromolecule on molecular relaxation of polymers was studied in the following polymers: polymethyl acrylate, polypropyl acrylate, poly- $\beta$ -chloro-ethyl acrylate, polyvinyl acetate, polyvinyl butyrate, and poly- $\beta$ -chlorovinyl propionate (Ref. 27: G. P. Mikhaylov, L. V. Krasner, v pechati (in print))

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Study of molecular relaxation in ...

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The results are given in Tables 4 and 5. V. A. Kargin, G. L. Slonimskiy, N. I. Shishkin, and P. F. Veselovskiy are mentioned. There are 17 figures, 5 tables, and 32 references: 20 Soviet-bloc and 12 non-Soviet-bloc.

ASSOCIATION: Institut vysokomolekulyarnykh soyedineniy AN SSSR (Institute of High-molecular Compounds AS USSR)

Legend of Table 4: Comparison of data on dipole-radical losses of isomeric polymers. (1) Structural formula of the polymer; (2) ПМА (PMA) polymethyl acrylate; (3) ППА (PPA) polypropyl acrylate; (4) ПХЭА (PKhEA) poly-β-chloro-ethyl acrylate; (5) ПАА (PVA) polyvinyl acetate; (6) ПВБ (PVB) polyvinyl butyrate; (7) ПХЭП (PKhEP) poly-β-chlorovinyl propionate.

Card 5/8

S/190/62/004/010/005/010  
B101/B186

AUTHORS: Borisova, T. I., Burshteyn, L. L., Mikhaylov, G. P.

TITLE: Synthesis and examination of the structure of catalytic poly-n-butyl methacrylate. III. Possibility of estimating the stereoregularity of the polymer by studying the dielectric loss and polarization

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 4, no. 10, 1962, 1479-1485

TEXT: Poly-n-butyl methacrylate (PBMA) samples having different steric structures were used to determine  $\tan \delta$  and  $\epsilon'$  in bulk and in solution between 20 cps and 150 kcps, and  $-60 - +100^\circ\text{C}$ . The differences in the course of the curves  $\tan \delta$  versus  $T$  ( $^\circ\text{C}$ ) at 20 cps for atactic, syndiotactic, and isotactic PBMA (Fig. 1) is explained by a reduction in the probable relaxation time  $\tau$  of the dipole-elastic process for isotactic PBMA owing to increased mobility of the chain segments. As samples with different steric structures had the same density ( $1.06-1.07 \text{ g/cm}^3$ ), this increase in mobility is not attributable to loosening of structure but to weakened intramolecular correlation of the polar groups. From the Card 1/43

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R101/B186

Synthesis and examination of ...

function  $\log f_m = \varphi(1/T)$ , where  $f_m$  = the temperature coefficient of  $\tan \delta_{\max}$ , the apparent activation energy of the dipole-elastic loss is calculated to be 38 kcal/mole for atactic, 35 kcal/mole for syndiotactic, and 29 kcal/mole for isotactic PBMA, the vitrification temperatures being respectively 28, 21, and -14°C. Between 20 and  $1.5 \cdot 10^5$  cps, the dipole-radical loss showed no maximum in the whole temperature range studied. The linear dependence specific volume versus concentration was the same in all samples. For isotactic PBMA, the dipole moment  $\mu_0 \sqrt{g}$  was 1.52, and

for syndiotactic PBMA 1.45 debye. Since the above mentioned samples contained alternating sections with isotactic and irregular structures, it is concluded that the difference in dipole moments increases with the content of isotactic structure. The following formula is suggested for estimating the microtactic structure:

$P_{\text{sample}} = (1 - x_2)P_1 + x_2P_2$ , where  $P_{\text{sample}}$  = polarization of the sample studied,  $x_2$  = concentration of the polymer portion with regular structure,  $P_1$  and  $P_2$  = polarization of the irregular and isotactic polymer,

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Synthesis and examination of ...

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B101/B186

respectively, and  $P \sim \mu_{\text{eff}}^2 / 3kT$ . There are 4 figures and 2 tables.

ASSOCIATION: Institut vysokomolekulyarnykh soyedineniy AN SSSR  
(Institute of High-molecular Compounds AS USSR)

SUBMITTED: June 7, 1961

Fig. 1:  $\tan \delta$  versus temperature at 20 cps. (1) atactic PBMA;  
(2) isotactic PBMA; (3) and (5) syndiotactic PBMA.

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S/190/62/004/011/012/014  
B101/B144

AUTHORS: Mikhaylov, G. P., Borisova, T. I.

TITLE: Mobility of polyhalogen styrene macromolecules I. Investigation into the form of the molecular motion of poly-2-fluoro-5-methylstyrene by dielectric losses and polarization

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 4, no. 11, 1962, 1732-1738

TEXT:  $\tan \delta$  and  $\epsilon'$  of poly-2-fluoro-5-methylstyrene (PFMS) were measured between -160 and +165°C and at 15 - 150,000 cps. At low temperatures no dielectric loss of dipole-type was observed. At 115 - 120°C  $\tan \delta = f(\omega)$  passes through a maximum. The asymmetrical temperature dependence of  $\tan \delta$  proved the existence of dipole-elastic and dipole-radical losses. Only at frequencies less than 1 cps is it possible to observe  $\tan \delta_{\max}$  of the two losses directly and separately. The phenyl group side radicals of PFMS have a certain mobility which is rather independent of the main chain also in the glassy state. Above 120°C the motions of the side radicals combine with those of the macrochains to form a single molecular relaxation process

Card 1/2

Mobility of polyhalogen ...

S/190/62/004/011/012/014  
B101/B144

$\log f_{\max} = \psi(1/T)$  where the apparent activation energy of this process decreases from 90 kcal/mole at 100°C to 45 kcal/mole at 160°C. Above 110°C  $\mu_0$  approaches the constant value of  $\sim 1.45$  Debye. There are 7 figures and 1 table.

ASSOCIATION: Institut vysokomolekulyarnykh soyedineniy AN SSSR (Institute of High-molecular Compounds AS USSR)

SUBMITTED: July 14, 1961

Card 2/2

39239

S/076/62/036/007/002/010  
B101/B138

26.1620 (16.0912)

AUTHORS: Yakovleva, A. A., Borisova, T. I., and Veselovskiy, V. I.  
(Moscow)

TITLE: Structure of the electrical double layer on oxidized silver  
in alkali in the region of the transition from the lower to  
the higher oxide

PERIODICAL: Zhurnal fizicheskoy khimii, v. 36, no. 7, 1962, 1426 - 1431

TEXT: To find out the cause of the overvoltage which occurs in the transition region, the impedance of a silver electrode was measured in 1 N KOH the charging curve plotted, and the photoelectrochemical behavior investigated. Results: (1) High resistance and low capacitance were observed in the transition region. (2) When the polarization current is cut off, the potential shifts toward that of the system  $Ag/Ag_2O/OH^-$ . This potential drop consists in a quick and a slow section to the curve. (3) On illumination,  $\Delta y_{light}$  rises linearly with potential and falls rapidly when that of the higher oxide is reached. When the illumination stops, the original Card 1/2

Structure of the electrical ...

S/076/62/036/007/002/010  
B101/B138

potential is restored; here again, a quick and a slow process can be distinguished. Conclusions: The electrochemical and photoelectrochemical behavior of the silver electrode in alkali are connected with the semiconductor properties of the system. Due to the discharge of OH ions, oxygen is adsorbed on the lower oxide in the transition region. A barrier layer is formed which is polarized in the direction of the cutoff and determines the potential difference and the kinetics of the anodic process. The major drop in overvoltage occurs in the surface layer and in the layer of adsorbed polarized particles. The ratio of these jumps depends on the potential and the steady-state conditions of the process. There are 7 figures. The most important English-language reference is: T. P. Durkse, J. Electrochem. Soc., 106, 5, 1959. ✓

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova  
(Physicochemical Institute imeni L. Ya. Karpov)

SUBMITTED: August 13, 1960

Card 2/2

24.7000

L2188

S/076/62/036/011/018/021  
B101/B180

AUTHORS: Yakovleva, A. A., Borisova, T. I., and Veselovskiy, V. I.

TITLE: State of surface and mechanism of self-dissolution of germanium in hydrogen peroxide solutions

PERIODICAL: Zhurnal fizicheskoy khimii, v. 36, no. 11, 1962, 2541-2544

TEXT: The dependence of the potential, photoeffect, and capacitance on the  $H_2O_2$  concentration in 0.1 N NaOH was studied on n-type and p-type germanium (5 ohm-cm) (Fig. 2). Corresponding to the maximum dissolution rate at 0.5 moles/liter of  $H_2O_2$ , maximum capacitance also occurs at this concentration. The anodic polarization curves showed maximum saturation current at the lowest  $H_2O_2$  concentration. These data suggest that the etching of germanium in alkaline hydrogen peroxide solutions proceeds via a stage of  $GeO$  formation, and is electrochemical in nature, since  $H_2O_2$  is reduced on the cathode and  $Ge$  is dissolved on the anode. With a high  $H_2O_2$  excess, however,  $GeO$  oxidizes to  $GeO_2$ , and the dissolution process is inhibited.

Card 1/2

State of surface and mechanism...

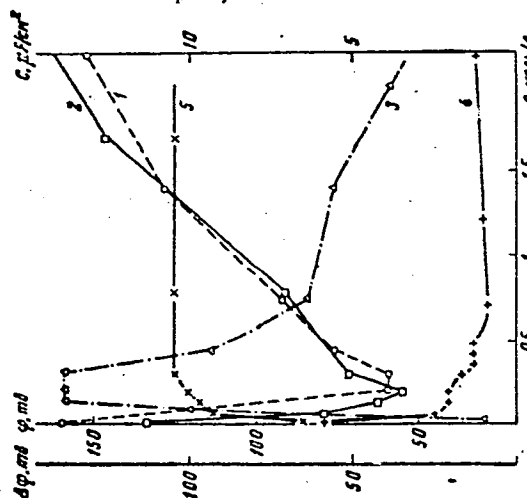
S/076/62/036/011/018/021  
B101/B180

There are 3 figures.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physico-chemical Institute imeni L. Ya. Karpov)

SUBMITTED: April 6, 1962

Fig. 2. Variation in potential, photoeffect, and capacitance of Ge electrode at different  $H_2O_2$  concentrations in 0.1 N NaOH; Potential of (1) n-type Ge; (2) p-type Ge; (3) capacitance (1 kc/sec); (4) photoeffect of n-type Ge; (5) photoeffect of p-type Ge; abscissa:  $H_2O_2$  concentration, moles/liter.



Card 2/2

24.7700

S/020/62/145<sup>39588</sup>/002/016/018  
B145/B101

AUTHORS: Yakovleva, A. A., Borisova, T. I., and Veselovskiy, V. I.

TITLE: Surface states of a germanium electrode during anodic dissolution

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 145, no. 2, 1962, 373-376

TEXT: The surface states of germanium of almost intrinsic conductivity ( $p = 42 \text{ ohm}\cdot\text{cm}$ ) and of n- and p-type germanium of different resistivities was studied in  $\text{H}_2\text{SO}_4$  and NaOH solutions by measuring the resistivity and capacity at a polarization of approximately 0-6 v and a-c frequencies between 100 cps and 200 kcps in the dark and with irradiated surface. Conclusions: an increase in anodic polarization reduces the number of electrons in the electrode surface, with holes being accumulated. The free carriers of the conduction and valency bands take part to a different extent in the anodic dissolution. The reaction proceeds by forming dipole groups  $\cdot(\text{Ge}(\text{OH})\text{O}^-)$  (hole acceptors) on the surface. The liberated electrons may be transferred to one of the two bands. The probability of transfer depends on the position of the complex with respect to the energy bands

Card 1/2

Surface states of a germanium...

S/020/62/145/002/016/018  
B145/B101

and also on the surface concentration of the holes. This level is assumed to be a donor level which lies above the middle of the forbidden band. With weak polarizations, the reaction mainly proceeds through the conduction band. The downward shift of the Fermi level observed, and the accumulation of surface holes with increasing anode potential facilitates the electron transfer from the reacting complex and increases the portion of current conducted through the valency band. There are 3 figures. The English-language references are: W. H. Brattain, C. Garret, Bell Syst. Techn. J., 34, 129 (1955); C. G. Garrett, W. H. Brattain, Phys. Rev., 99, 376 (1955).

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova  
(Physicochemical Institute imeni L. Ya. Karpov)

PRESENTED: April 4, 1962, by A. N. Frumkin, Academician

SUBMITTED: March 30, 1962

Card 2/2



5.4500

39579  
S/020/62/145/003/011/013  
B101/B144

AUTHORS: Izidinov, S. O., Borisova, T. I., and Veselovskiy, V. I.

TITLE: Characteristics of the photochemical behavior of the silicon-alkali interface

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 145, no. 3, 1962, 598-601

TEXT: Exposure of the Si - KOH interface to light showed passivation of the Si electrode and activation of the passive electrode. Passivation occurred only with anodic currents  $i_a < i_{a \max}$  at all KOH concentrations ( $10^{-3}$  - 20 N). In n-Si, the potential  $\psi$  becomes more negative, in p-Si more positive. The rate of passivation is inversely proportional to the time of exposure and increases as the potential and light intensity increase.  $Z = k_2 \exp(i_{a \max} - i_a)$ , where  $i_{a \max} = k_3 i_{s-d}$  ( $i_{s-d}$  = self-dissolution current) holds for the number Z of absorbed light quanta. Complete photoactivation occurs only at the beginning of the passive state at  $\psi = 100-300$  mv. At  $\psi = 400-600$  mv, activation is incomplete. The potential range of complete activation is broadened in 10 N KOH by a rise of

Card 1/3

Characteristics of the photochemical ...

S/020/62/145/003/011/013.  
B101/B144

temperature. In dilute solutions, a narrow range of activation occurred at 1N KOH and 60°C only. To find a relation between these effects and the acceptor or donor properties of oxygen, the resistance R, capacitance C, and photoeffect  $\Delta V_p$  were measured as a function of  $\psi$  at a-c. (0.2 - 100kc/sec) (Fig. 3). Conclusions: Light irreversibly changes the type of bond of oxygen adsorbed on the Si-KOH interface. When the  $OH^-$  ions are discharged,

dipoles form:  $\begin{array}{c} \diagup \\ Si \\ \diagdown \end{array} \begin{array}{c} OH \\ OH \end{array} + OH^- \rightarrow \begin{array}{c} \diagup \\ Si \\ \diagdown \end{array} \begin{array}{c} O^- \\ OH \end{array} + H_2O$  which cause an exponential decrease of  $i_{s-d}$ . At a high anodic potential, the holes recombine:  $\begin{array}{c} \diagup \\ Si \\ \diagdown \end{array} \begin{array}{c} O^- \\ OH \end{array} \rightarrow \begin{array}{c} \diagup \\ Si \\ \diagdown \end{array} \begin{array}{c} OH \\ OH \end{array}$ . Photopassivation or photoactivation sets in as oxygen acts either

as acceptor or donor for electrons. There are 3 figures. The English-language reference is: G. Heiland, Diss. Farad. Soc., no. 28, 168 (1959).

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physico-chemical Institute imeni L. Ya. Karpov)  
Card 2/3

S/020/62/145/003/011/013

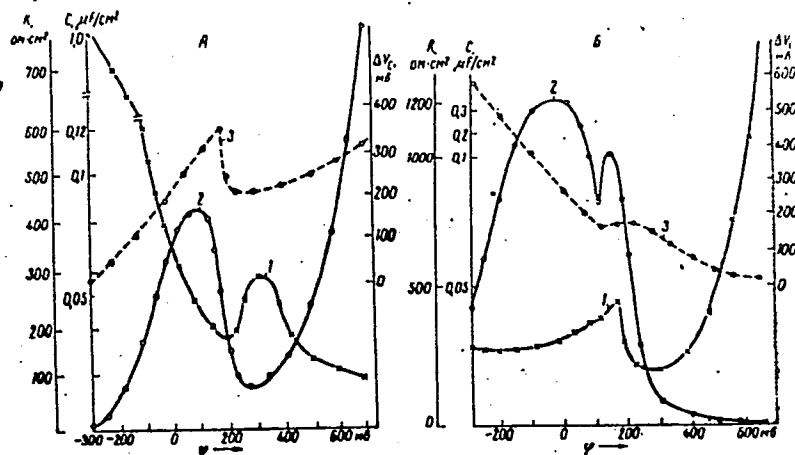
B101/B144

Characteristics of the photochemical ...

PRESENTED: April 4, 1962, by A. N. Frumkin, Academician

SUBMITTED: March 3, 1962

Fig. 3: (1)  $C=f(\psi)$ ,  
( $\mu F/cm^2$ ); (2)  $R=f(\psi)$ ,  
( $ohm \cdot cm^2$ ); (3)  
 $\Delta V_c = \Delta V_p = f(\psi)$ ,  
(mv). (A) for n-Si;  
(B) for p-Si.



Card 3/3

TAGER, Anna Aleksandrovna. Prinimali uchastiye: TSVANKIN, D.Ya.;  
BORISOVA, T.I.; BURSHTEYN, L.L.; SLINKIN, A.A.; DULOV, A.A.;  
MIKHAYLOV, G.P., red.; ROGAYLINA, A.A., red.; SHPAK, Ye.G.,  
tekhn. red.

[Physical chemistry of polymers. Fiziko-khimiia polimerov.  
Moskva, Goskhimizdat, 1963. 528 p. (MIRA 16:12)  
(Polymers)]

VESELOVSKIY, V.I.; BORISOVA, T.I.; YAKOVLEVA, A.A.; IZIDINOV, S.O.

"Some Specific Features of the Double Layer Structure and Electrode Process on Elemental and Oxide Semiconductors Ge, Si, Ag<sub>2</sub>O, Ta<sub>2</sub>O<sub>5</sub>, TiO<sub>2</sub>."

Report presented at the 14th meeting CITCE, Intl. Comm. of Electrochemical Thermodynamics and Kinetics, Moscow, 1965 Aug 63.

Karpov Physico-Chemical Institute, Moscow, U.S.S.R.

IZIDINOV, S.C.; BORISOVA, T.I.; VESELOVSKIY, V.I.

Electrochemical and photoelectrochemical behavior of the silicon  
electrode in acid and alkaline solutions. Zhur. fiz. khim. 36  
no.6:1246-1254 Je'62 (MIRA 17:37)

1. Fiziko-khimicheskiy institut imeni Karpova, Moskva.

MIKHAYLOV, G.P.; BORISOVA, T.I.

Molecular motion in polymers. Usp. fiz. nauk 83 no. 1:63-79  
My '64. (MIRA 17:6)

MIKHAYLOV, G., prof., doktor fiziko-matematicheskikh nauk; ~~BORISOVA, T.~~  
kand. fiziko-matematicheskikh nauk

Polymers in radio engineering. Tekh. i vooruzh. no. 5: 71-77  
My '64. (MIRA 17:9)



L 10757-65 EWT(m)/EPF(c)/EPR/ENP(j)/T Pc-l/Pr-l/PS-l RPL/ESD(t)/ASD(a)-5/  
ESD(ga)/AS(mg)-2/SSD/AFWL/AFETR RM/277 S/0190/64/006/010/1778/1784  
ACCESSION NR: AP4G47201

AUTHOR: Mikhaylov, G. P.; Borisova, T. I.

TITLE: Some characteristics of the dipole elastic losses in polymers in relation to their structure

SOURCE: Vysokomolekulyarnyye soedineniya, v. 6, no. 10, 1964, 1778-1784

TOPIC TAGS: polymer structure, polyalkylchloromethacrylate, methylchloromethacrylate, ethylchloromethacrylate, propylchloromethacrylate, butylchloromethacrylate, dielectric loss, polarization, glass temperature, relaxation, dipole elastic loss

ABSTRACT: The dielectric losses and the polarization of normal polyalkylchloromethacrylates were investigated by measuring the temperature and frequency dependence of  $\tan \delta$  and  $\epsilon'$  for  $\alpha$ -methylchloromethacrylate,  $\beta$ -ethylchloromethacrylate,  $\gamma$ -propylchloromethacrylate and  $\delta$ -butylchloromethacrylate on 100-160  $\mu$  thick films. The preparation of the samples and the conditions of measurement are described. For the dielectric measurement of  $\tan \delta$  and  $\epsilon'$ , a temperature range of -170 to 160C and a frequency range of 20 -- 150 kilocycles were used. The temperature dependence of  $\tan \delta$  was studied at 0.4 and 10 kilocycles. At lower frequencies, especially at higher temperatures, the  $\tan \delta$  values increase considerably without any change

L 10757-65

ACCESSION NR: AP4047201

In the nature of the correlation between the dielectric strength and the frequency or temperature. The maxima observed in curves relating frequency to  $\text{tg} \delta$  are independent of the temperature. Lengthening of the side chains in polyalkylmethacrylates reduces the relaxation time and the apparent activation energy of the dipole-elastic process, but the width of the  $\tau$  distribution remains unchanged. The effective dipole moment ( $\mu \sqrt{g}$ ) d.e. of the kinetic unit of the segmental type, calculated for the monomer, decreases with an increasing number of  $\text{CH}_2$  groups in the side chain. Its value, as well as the  $\text{tg} \delta_{\text{max}}$  of the dipole-elastic losses, approached the analogous values for polyalkylchloromethacrylate with the same number of  $\text{CH}_2$  groups in the side chain. This is due to the fact that the motion of the end groups of the side chain becomes increasingly independent of the motion of the carbon backbone. The effect of polar substituents on the relaxation time, activation energy and  $\text{tg} \delta_{\text{max}}$  of dipole-elastic losses as a function of their position in the chain was also studied. Introduction of a polar group increases the relaxation time; consequently, the  $T_c$  of the polymer also rises, regardless of its position. The apparent activation energy is generally independent of the introduction of polar groups, and is determined by steric factors. Orig. art. has: 5 figures and 3 tables.

ASSOCIATION: Institut' vysokomolekulyarnykh soedineniy AN SSSR (Institute of Macromolecular Compounds, AN SSSR)

Card 273

L 10757-65

ACCESSION NR: AP4047201

SUBMITTED: 23Nov63

ENCL: 00

SUB CODE: 00

NO REF SOV: 009

OTHER: 006

1. 10757-65

2. 10757-65

3. 10757-65

4. 10757-65

5. 10757-65

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7. 10757-65

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Card 3/3

L 37656-65 EPT(c)/EPR/EWP(J)/EWT(m)/T PC-l/PT-l/PS-l RPL RM/WM

ACCESSION NR: AP4047202

S/0190/64/006/010/1785/1790

27  
27  
B

AUTHOR: Mikhaylov, G.P.; Borisova, T.I.

TITLE: Dipole relaxation of normal polychloroalkylmethacrylates at low temperatures

SOURCE: Vy\*sokomolekulyarny\*ye soyedineniya, v. 6, no. 10, 1964, 1785-1790

TOPIC TAGS: dipole relaxation, polymethacrylate, polychloroalkylmethacrylate, dielectric loss angle, permittivity, chlorinated polymer

ABSTRACT: The dependence of the dielectric loss angle and permittivity of poly- $\alpha$ -chloromethylmethacrylate (P $\alpha$ CMMA), poly- $\beta$ -chloroethylmethacrylate (P $\beta$ CEMA), poly- $\gamma$ -chloropropylmethacrylate (P $\gamma$ CPMA) and poly- $\delta$ -chlorobutylmethacrylate (P $\delta$ CBMA) on temperature (-60 to -130C) and sonic frequencies was studied, using a published experimental technique (Vysokomol. soyed. v. 6, 1964, 1778). The measurements indicated that three types of molecular motion and corresponding regions of dipole losses are exhibited by the studied polymers. The first elastic region is related to the motion of molecular segments and the second depends on the mobility of COO- groups and is located at approximately 70C for sonic frequencies. The third region, which has been investigated in the present study, is due to the motion of side chain terminals and is observed at approximately -100C. With increasing length of the side chains the interaction

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L 37656-65

ACCESSION NR: AP4047202

2

between their terminals and the COO- group weakens, causing a decrease in relaxation times and increases in effective dipole moments and  $\text{tg } \delta_{\text{max}}$  values. The dependence of  $\text{tg } \delta_{\text{max}}$  on temperature is shown in Fig. 1 of the Enclosure. Orig. art. has: 6 figures.

ASSOCIATION: Institut vysokomolekulyarnykh soyedineniya AN SSSR (Institute for Macromolecular Compounds, AN SSSR)

SUBMITTED: 23Ncv63 ENCL: 01

SUB CODE: MT, OC

NO REF SOV: 006

OTHER: 006

Card 2/3

L 01048-67 EWT(1)/EWT(m)/EWP(j)/T IJP(c) WW/GG/RM

ACC NR: AP6019535

(A)

SOURCE CODE: UR/0190/66/008/006/0969/0979

AUTHOR: Mikhaylov, G. P.; Borisova, T. I.; Nigmankhodzhayev, A. S.

ORG: Institute of High Molecular Compounds, AN SSSR (Institut vysokomolekulyarnykh soyedineniy AN SSSR)

TITLE: Dielectric relaxation in copolymers of n-butylmethacrylate with styrene

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 8, no. 6, 1966, 969-979

TOPIC TAGS: dielectric property, dielectric material, methacrylate plastic, styrene, COPOLYMER

ABSTRACT: Molecular dielectric relaxation and polarization of copolymers of n-butylmethacrylate with styrene (100-19% styrene) were studied in the 140°-290°C range and at frequencies of  $20-5 \cdot 10^8$  cps. The object of the work was to examine the effect of the methyl groups in the main chain upon the overall dielectric relaxation of a copolymer and to define the principles which govern dielectric relaxation in copolymers at temperatures of 200°C and more above their glass points. It was found that there is a motion of the C=O groups within an n-butylmethacrylate-styrene copolymer in the glass state. As the content of styrene in the copolymer chain increased, both the relaxation time and the activation energy of the kinetic units gradually declined. On the same time, no additivity was found in the cases of the composition dependence of the copolymer's glass points, activation energy of relaxation, and the maximum dielectric

UDC: 678.01:53+678.13+678.744+678.746

Card 1/2

L 01048-67

ACC NR: AP6019535

relaxation angle. These effects are attributed to the decreasing steric interference of the CH<sub>3</sub>-groups in the copolymer main chain. At temperatures of 200°C and more, above the respective glass points, dielectric relaxation time and polarization were found to be independent of the copolymers' composition. It was found that the effective dipole moments of the dipole-group polarization were independent of temperature while the dipole-segmental and static field polarizations were found to decrease linearly with temperature. Orig. art. has: 7 figures, 1 table.

SUB CODE: 07,11/

SUBM DATE: 07May65/

ORIG REF: 011/

OTH REF: 007

awm

Card 2/2

BORISOVA, T.P.

Effect of Matsesta mineral waters on the course of rheumatism associated with cardiac damage in children. *Pediatrics*, Moskva No.4:61-62 July-Aug 51.  
(CML 21:4)

1. Of the Children's Clinic, State Balneological Scientific-Research Institute imeni I.V. Stalin.



BORISOVA, T.P.

Direct and conditioned reflex action of caffeine on higher nervous activity in dogs. Zh. vys. nerv. deiat. 5 no.6:855-862 N-D(MIRA 9:3) '53.

1. Laboratoriya fiziologii i patologii vysshey nervnoy deyatel'nosti Instituta normal'noy i patologicheskoy fiziologii AMN SSSR.

(CAFFEINE, effects.

on higher nervous funct. in dogs, indirect & conditioned mechanisms of action)

(REFLEX, CONDITIONED

conditioned mechanism of eff. of caffeine on higher nervous funct. in dogs)

(CENTRAL NERVOUS SYSTEM, effect of drugs on, caffeine, indirect & conditioned mechanisms of higher nervous funct. reactivity in dogs)

*BERISOVA, T.P.*  
USSR/Human and Animal Physiology - The Nervous System.

v-8

Abs Jour : Ref Zhur - Biol., No 4, 1958, 18588

Author : T.P. Borisova

Inst :

Title : A Study of Conditioned-Reflex Activity in Rheumatic Children (In the Period Between Attacks) in Connection with Treatment with Hydrogen Sulfide Baths.

Orig Pub : Pediatriya, 1956, No 4, 60-68

Abstract : In the period between rheumatic attacks in children (9 to 16 years of age), a delay is noted in the formation of positive conditioned reflexes, as well as a more pronounced latent period of conditioned reflexes and an inhibitory after-effect of differentiation. This indicates a weakening of the inhibitory process and a delay in the concentration of the inhibitory process. Normalization of conditioned reflexes after treatment at the hydrogen sulfide baths of Matsesta lasts several months and is combined

Card 1/2

USSR/ Human and Animal Physiology - The Nervous System.

V-6

Abs Jour : Ref Zhur - Biol., No 4, 1958, 18583

with an improvement in the general condition of the  
patient.

Iz bal'neologicheskogo otdeleniya (zav-kandidat meditsinskikh nauk T. P. BORISOVA)  
Bal'neologicheskogo nauchno-issledovatel'skogo instituta imeni I. V. Stalina  
(i. o. direktora L. A. Kuznetsov)

Card 2/2

BORISOVA, T.P.; Cand Bio Sci--(diss) " On the conditioned reflex  
effect of ~~the~~ preparations which stimulate the nervous system (caffeine,  
phenamine)." Mos, 1958. 12 pp (Acad Med Sci USSR), 200 copies (Bl, 25-58,  
110)

35 -

BORISOVA, T.P., kand. med. nauk; IARSKIY, E.G.

Secretion of 17-ketosteroids in children with rheumatic fever in relation to treatment with steroid hormones. *Pediatrics* 36 no.11: 46-53 N '58.  
(MIRA 12:8)

1. Iz revmatologicheskoy kliniki (zav. - chlen-korrespondent AMN SSSR, prof. O.D. Sokolova-Ponomareva) i iz biokhimicheskoy laboratorii (zav - doktor biologicheskikh nauk A.A. Titayev) Instituta pediatrii (dir. - chlen-korrespondent AMN SSSR prof. O.D. Sokolova-Ponomareva) AMN SSSR.

(RHEUMATIC FEVER) (STERIODS)  
(HORMONES--THERAPEUTIC USE)

BORISOVA, T.P.; LARSKIY, E.G.

On the content of antihyaluronidase in the blood of children  
with rheumatic fever in connection with steroid hormone therapy.  
Pediatriia 38 no.8:40-45 Ag '60. (MIRA 13:12)

1. Iz revmatologicheskogo otdeleniya (zav. - chlen-korrespondent  
AMN SSSR prof. O.D. Sokolova-Ponomareva) i biokhimicheskoy laba-  
ratorii (zav. - prof. A.A. Titayev) Instituta pediatrii AMN SSSR  
(dir. - chlen-korrespondent AMN SSSR prof. O.D. Sokolova-Ponomareva).  
(RHEUMATIC FEVER) (HYALURONIDASE) (CORTICOTROPIN) (CORTISONE)

SOKOLOVA-PONOMAREVA, O.D.; BORISOVA, T.P. (Moskva)

Corticosteroids in the compound treatment of children with  
rheumatism. Pediatrics no.8:73-79 '61. (MIRA 14:9)  
(RHEUMATIC FEVER) (CORTICOSTEROIDS)

BORISOVA. T.P., kand.med.nauk

Capillary permeability and antihyaluronidase in the blood serum  
in rheumatism in children. Vop. okh. mat. i det. 7 no.5:39-43  
My '62. (MIRA 15:6)

1. Iz kliniki dlya detey starshego vozrasta (zav. - deystvitel'nyy  
chlen AMN SSSR prof. O.D. Sokolova-Ponomarev) i biokhimicheskoy  
laboratorii (zav. - prof. A.A. Titayev) Instituta pediatrii  
AMN SSSR (dir. - dotsent M.Ya. Studenikin).

(CAPILLARIES-PERMEABILITY) (ANTIHYALURONIDASE)  
(RHEUMATIC FEVER)



BORISOVA, T. P., kand. med. nauk; KORDUBAN, T. A.

Clinical evaluation of the musoproteins in the blood in rheumatism  
in children. *Pediatrics* 41 no.3:15-22 '62. (MIRA 15:2)

1. Iz kliniki starshego detskogo vozrasta (zav. - deystvitel'nyy  
chlen AMN SSSR prof. O. D. Sokolova-Ponomareva) i biokhimicheskoy  
laboratorii (zav. - doktor biologicheskikh nauk A. A. Titayev)  
Instituta pediatrii AMN SSSR (dir. - dotsent M. Ya. Studenikin)

(RHEUMATIC FEVER) (MUCOIDS)

BORISOVA, T.P.

Change in the antitoxic function of the liver in children with  
rheumatic fever during treatment with hydrogen sulfide baths.

Vop.kur., fizioter.i lech.fiz.kul't. 28 no.1:38-44 '63.

(MIRA 16:4)

(RHEUMATIC FEVER)

(LIVER)

(BATHS, MEDICATED)

BORISOVA, T.P., kand.med.nauk

Mechanism of the disorders in capillary permeability in rheumatic fever in children. Vop.revm. 1 no.2:61-69 Ap-Je '61.

(MIRA 16:4)

1. Iz Instituta pediatrii (dir. - deystvitel'nyy chlen AMN SSSR prof. O.D.Sokolova-Ponomareva) AMN SSSR, Moskva.

(CHILDREN--DISEASES) (RHEUMATIC FEVER) (CAPILLARIES--PERMEABILITY)

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15. 9/30

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Przhebyl'skiy, M.I., Fedorina, Zh.A., Chugay, A.D.

TITLE: Organic Accelerators for Continuous Vulcanization of Dipped Rubber Goods

PERIODICAL: Kauchuk i Rezina, 1960, No. 1, pp. 48 - 51

TEXT: Development work performed in the plant in 1954 has shown that it is possible to carry out vulcanization of dipped articles in the medium of hot air without pressure by individual dipping in sulfur-containing glue and subsequent processing of the film in a benzole solution of accelerator K-48. The toxicity of benzole and of the accelerator solutions rendered this technology prohibitive for industrial application. In this connection, the necessity arose of searching for ultra-accelerators highly soluble in less toxic solvents, e.g. in gasoline. For the synthesis of highly active accelerators dithio-carbamates were employed in conjunction with amino-containing compounds. The article lists a number of synthesized compounds, which were tested in standard rubber mixtures based on natural rubber and industrial glues used in the manufacture of dipped goods. The

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rubber mixture had the following composition (weight parts): natural rubber 100, sulfur 3, Gaptax 0.7, zinc oxide 5, stearic acid 0.5. Industrial glues of the No. 252 and No. 252-1 types were used. The results of the physico-mechanical tests of the samples of rubber, obtained on the base of a standard rubber compound with the addition of amino of dialkyl-dithio-carbamic acids are shown in Table 1. As can be seen the synthesized salts of the dialkyl-dithio-carbamic acids are effective accelerators for vulcanization of dipped articles in an air medium. Optimum vulcanization is achieved in much less time as compared with control compounds with Captax accelerator. Experiments have revealed the possibility of vulcanizing dipped articles in an atmosphere of hot air of 100-115°C without pressure with the aid of the following compounds: dibutyl-dithio-carbamate of dibutylamine, dibutyl-dithio-carbamate of triethylamine, dibutyl-dithio-carbamate of tributylamine, diiso-amyl-dithio-carbamate of tri-ethylamine, diiso-amyl-dithio-carbamate of di- and tri-isoamyl-amine, di-ethyl-dithio-carbamate of di- and tri-ethylamine, hexa-methylene-dithio carbamate of hexa-methylene-amine. The solubility of these com-

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pounds in gasoline, permits individual dipping of articles in sulfurous and in accelerator glues to be carried out, as well as the continuous vulcanization of dipped articles. There are 3 tables and 1 reference. ✓

ASSOCIATIONS: Kiyevskiy zavod "Krasnyy rezinshchik" (Kiyev Plant, "Red Rubber Workers") Dnepropetrovskiy khimiko-tekhnologicheskii institut  
(Dnepropetrovsk Chemical Technological Institute)

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